System-wide Ecological Indicators for Everglades Restoration 2018

The South Florida
Ecosystem Restoration Task
Force

Working Group/Science Coordination Group Meeting 28 November 2018

Presented by Laura Brandt

Biennial Report to Congress

Reporting Period

July 1, 2016 – June 30, 2018

Full Report

SOUTH FLORIDA ECOSYSTEM RESTORATION TASK FORCE

LEADERSHIP · PARTNERSHIP · RESULTS

SYSTEM-WIDE ECOLOGICAL INDICATORS FOR EVERGLADES RESTORATION 2018

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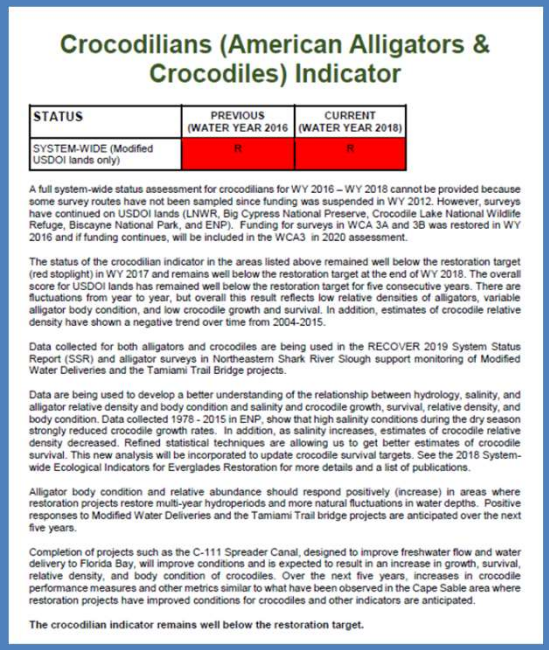
Restoring America's Everglades

Biennial Report to Congress
System-wide Ecological Indicators

- Background
- Hydrologic Context for Water Years 2017 and 2018 (May 1, 2016 to April 30, 2018)
- Indicators at a Glance
- One page for each indicator

Links to more information in the full System-wide Ecological Indicators for Everglades Restoration 2018 Report , Systems Status Report, and South Florida Environmental Report



Crocodilians (American Alligators & Crocodiles) Indicator

STATUS	PREVIOUS (WATER YEAR 2016	CURRENT (WATER YEAR 2018)
SYSTEM-WIDE (Modified USDOI lands only)	R	R

A full system-wide status assessment for crocodilians for WY 2016 – WY 2018 cannot be provided because some survey routes have not been sampled since funding was suspended in WY 2012. However, surveys have continued on USDOI lands (LNWR, Big Cypress National Preserve, Crocodile Lake National Wildlife Refuge, Biscayne National Park, and ENP). Funding for surveys in WCA 3A and 3B was restored in WY 2016 and if funding continues, will be included in the WCA3 in 2020 assessment.

The status of the crocodilian indicator in the areas listed above remained well below the restoration target (red stoplight) in WY 2017 and remains well below the restoration target at the end of WY 2018. The overall score for USDOI lands has remained well below the restoration target for five consecutive years. There are fluctuations from year to year, but overall this result reflects low relative densities of alligators, variable alligator body condition, and low crocodile growth and survival. In addition, estimates of crocodile relative density have shown a negative trend over time from 2004-2015.

Data collected for both alligators and crocodiles are being used in the RECOVER 2019 System Status Report (SSR) and alligator surveys in Northeastern Shark River Slough support monitoring of Modified Water Deliveries and the Tamiami Trail Bridge projects.

Data are being used to develop a better understanding of the relationship between hydrology, salinity, and alligator relative density and body condition and salinity and crocodile growth, survival, relative density, and body condition. Data collected 1978 - 2015 in ENP, show that high salinity conditions during the dry season strongly reduced crocodile growth rates. In addition, as salinity increases, estimates of crocodile relative density decreased. Refined statistical techniques are allowing us to get better estimates of crocodile survival. This new analysis will be incorporated to update crocodile survival targets. See the 2018 System-wide Ecological Indicators for Everglades Restoration for more details and a list of publications.

Alligator body condition and relative abundance should respond positively (increase) in areas where restoration projects restore multi-year hydroperiods and more natural fluctuations in water depths. Positive responses to Modified Water Deliveries and the Tamiami Trail bridge projects are anticipated over the next five years.

Completion of projects such as the C-111 Spreader Canal, designed to improve freshwater flow and water delivery to Florida Bay, will improve conditions and is expected to result in an increase in growth, survival, relative density, and body condition of crocodiles. Over the next five years, increases in crocodile performance measures and other metrics similar to what have been observed in the Cape Sable area where restoration projects have improved conditions for crocodiles and other indicators are anticipated.

The crocodilian indicator remains well below the restoration target.

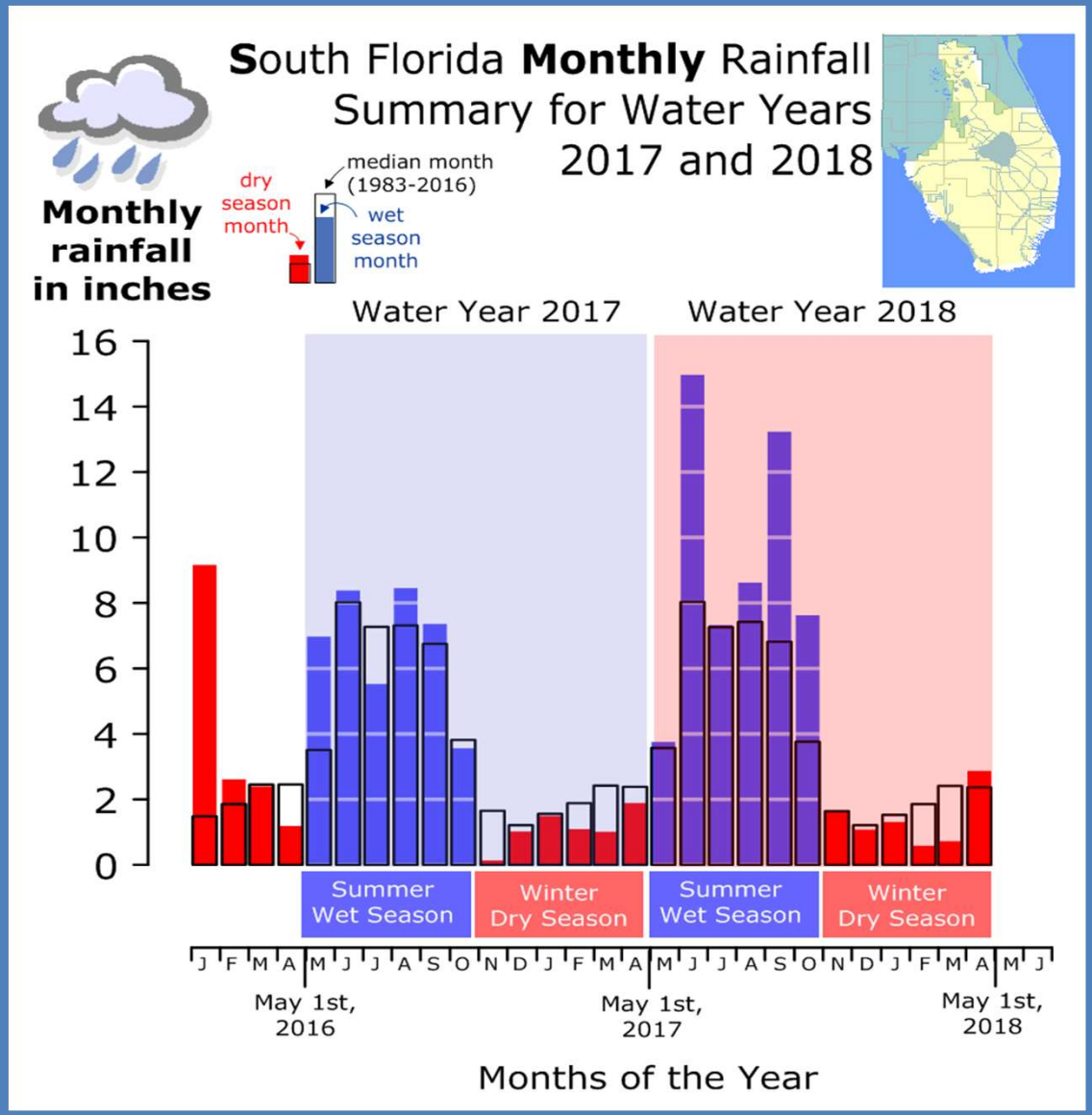
Full System-wide Ecological Indicators Report

- Executive Summary with Big Picture Findings
- Introduction
- Hydrologic context
- Stoplight format
- Indicators overview
- Individual indicators
  - Summary/key findings
  - Stoplight table (5 years)
  - Updates on calculation of the indicator
  - How have the data been used
  - New insights relevant to future restoration decisions
  - Publications/report
  - Map showing indicator status WY18
- Contributors to 2018 report

Big Picture Findings

- None of the indicators have shown improvement over this reporting period and none have met restoration targets
- Long-term tracking of these indicators has provided us information that can and is being used in restoration planning
- Natural events provide insights into restoration
- Invasive exotic plants and animals continue to present challenges to Everglades restoration
- Although concentrations have been reduced substantially, phosphorus continues to be a system-wide water quality concern
- Monitoring programs continue to have funding challenges

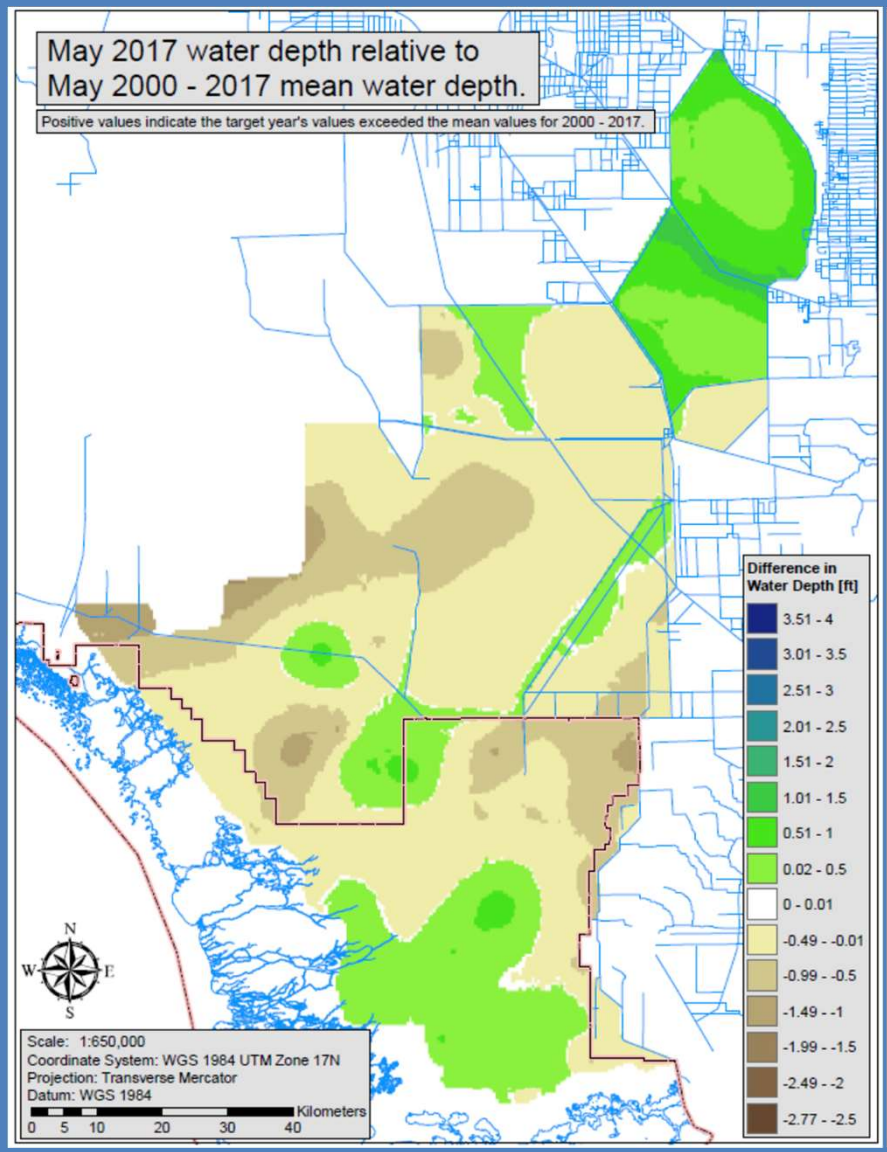
Hydrologic Context

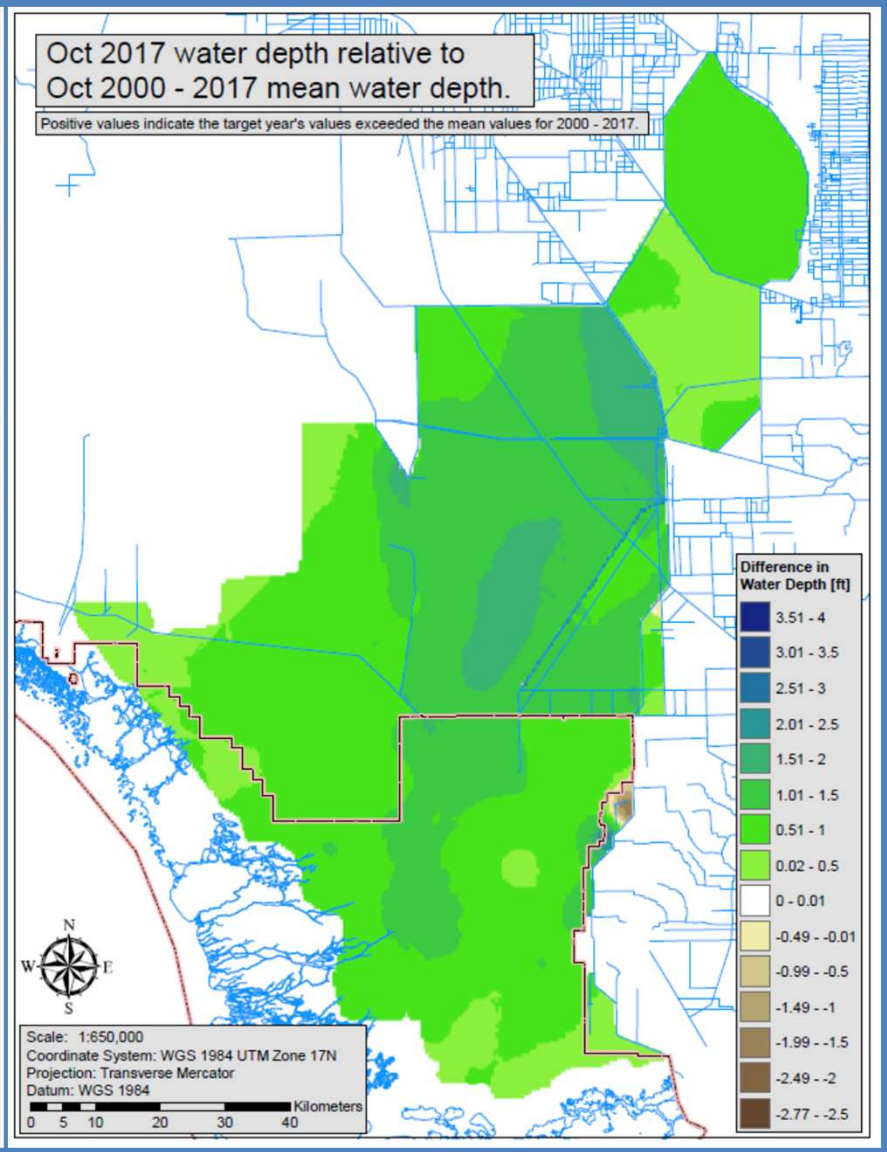


WY17- Average wet season; below average dry season

WY18- Record rainy wet season; below average dry season

Hydrologic Context





Indicators at a Glance

	WY2014	WY2015	WY2016	WY2017	WY2018
Invasive Exotic Plants	Y	Y	Y	Y	Y
Lake Okeechobee Nearshore Zone Submersed Aquatic Vegetation	R	R	R	R	R
Eastern Oysters- **Modified (Northern Estuaries only)**	R	no information provided	R	no information provided	R
Crocodilians (American Alligators & Crocodiles)- **Modified (DOI Lands Only)**	R	R	R	R	R
Fish & Macroinvertebrates (WCA3 and ENP only)	R	R	R	R	R
Periphyton- **Modified (no species composition)**	Y	Y	Y	Y	Y
Wading Birds (White Ibis & Wood Stork)	R	R	R	R	R
Southern Coastal Systems Phytoplankton Blooms- **Modified (no southwest shelf)**	Y	Y	R	Y	R
Florida Bay Submersed Aquatic Vegetation	Y	Y	Y	Y	Y
Juvenile Pink Shrimp- **Modified (no sampling)**	B	B	B	B	B
Wading Birds (Roseate Spoonbill)	R	R	R	R	R

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  - New insights relevant to future restoration decisions
  - Publications/report
  - Map showing indicator status WY18

Contributors to 2018 report

Lead Scientists for Indicator Report			
First Name	Last Name	Agency	Indicator
Joan	Browder	NOAA	Pink Shrimp
Peter	Frederick	UF	White Ibis and Wood Stork
Evelyn	Gaiser	FIU	Periphyton
Jerry	Lorenz	Audubon of Florida	Roseate Spoonbill
Chris	Madden	SFWMD	Florida Bay Submersed Aquatic Vegetation
Frank	Mazzotti	UF	Crocodilians
Melanie	Parker	FWC	Oysters
LeRoy	Rodgers	SFWMD	Invasive Exotic Species
Andy	Rodusky	SFWMD	Lake Okeechobee Nearshore
David	Rudnick	NPS	Southern Coastal Systems Phytoplankton Blooms
Joel	Trexler	FIU	Fish and Macroinvertebrates
Others Involved			
Marsha	Banshee	OERI	Document Compilation
Laura	Brandt	FWS	Crocodilians, Document Coordination
Venetia	Briggs-Gonzalez	UF	Crocodilians
Michael	Cherkiss	USGS	Crocodilians
Jose	Cabaleiro	OERI	Web Document
Seth	Farris	UF	Crocodilians
Dale	Gawlik	FAU	White Ibis and Wood Stork
Angie	Huebner	USACE	Invasive Exotic Species
Caitlin	Hackett	UF	Crocodilians
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Jeff	Kline	NPS	Fish & Macroinvertebrates
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Ian	Zink	UM/NOAA	Pink Shrimp

Questions?